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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,049	09/21/2005	Rainer Hainberger	1826-1063	5515
21171 7590 01/05/2007 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER HUGHES, DEANDRA M	
			ART UNIT 3663	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/05/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/530,049

Applicant(s)

HAINBERGER ET AL.

Examiner

Deandra M. Hughes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 1, 10-12 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-9 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/4/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) filed on 4/4/05 has been considered by the examiner and is found to be cumulative to the art of record.

### ***Drawings***

2. Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 5-9, and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Fludger (US 2003/0081307 filed Sep. 28, 2001) in view of Bolshtyansky (US 6,456,426 filed Aug. 7, 2001).

With regard to claims 2 and 5-9 Fludger discloses an amplification system (fig. 1) employing Raman amplification with a plurality of first-order Raman pumps and at least one second-order Raman pump (paragraphs [0026] and [0027]) which amplifies the first-order Raman pumps the first- and second-order Raman pumps (a 1<sup>st</sup> order pump is inherently amplified by the 2<sup>nd</sup> order pump, this is why the 2<sup>nd</sup> order pump is the 2<sup>nd</sup> order pump; in Raman amplifying fibers, a pump signal one Stokes shift away, i.e. approximately 100nm, pumps a signal) counter-propagating (the pumps in fig. 1 are counter-propagating) to signal light in an optical fiber, the amplification system comprising:

- a plurality of light sources generating pump light of the first- and second-order pumps (pumps #14, #16, #18, #20, and #22 are a plurality of light sources);
- wherein the pump light of the first- and second-order pumps are modulated by using relative timing of the first- and second-order pumps to allow flattening lateral signal power distribution along the optical fiber (fig. 5 and paragraphs [0046]-[0047]).

However, Fludger does not specifically disclose a modulator unit modulating the pumps. Bolshtyansky teaches a modulator unit (fig. 2, #38 and col. 8, lines 1-9) which controls the relative timing among the pump pulses (e.g. figs. 6-7) by electronically adjusting duty cycle (col. 7, line 67). Further, Bolshtyansky teaches the use of larger duty cycles when overlap of the pumps is acceptable (col. 8, lines 1-2). Also, Bolshtyanasky teaches that power transfer among the pumps are pushed deeper into the fiber by the

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modulation of the pumps (fig. 5 and col. 6, lines 32-47). It would have been obvious to one of ordinary skill in the art (e.g. an optical engineer) at the time the invention was made to modulate the pumps for the advantage of reducing the detrimental effects of cross-pump pumping, as is specifically taught by Bolshtyansky (col. 7, lines 10-15).

Claim 13 is merely the method of normal operations of the apparatus as claimed.

5. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fludger in view of Bolshtyansky as applied to claim 1 above, and further in view of Papernyi (Third-Order Cascaded Raman Amplification, OFC 2002).

Fludger in view of Bolshtyansky does not disclose third-order pumping. However, Papernyi teaches both counter and co-propagating third-order Raman pumping (figs. 3-4). It would have been obvious to one of ordinary skill in the art (e.g. an optical engineer) at the time the invention was made to third-order Raman pump the amplifier for the advantage of reduced noise and complexity, as is specifically taught by Papernyi (FB4-1, 1<sup>st</sup> paragraph).

### ***Conclusion***

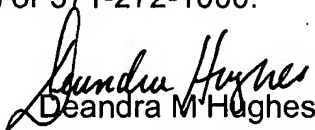
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dominic, Emori, Gertsvolf, Krummrich, Odate, and Tanaka disclose second-order Raman pumping.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

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8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Deandra M Hughes  
Primary Examiner  
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